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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,044	07/07/2003	Hyou Takahashi	Q76465	4729
23373	7590	12/29/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			WALKE, AMANDA C	
			ART UNIT	PAPER NUMBER
			1752	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/613,044	Applicant(s) TAKAHASHI ET AL.	
	Examiner Amanda C. Walke	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

In light of Applicant's arguments, the examiner dropped the rejections of record and new rejections follow.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-12, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama et al (EP 1179750).

Kodama et al disclose a positive photosensitive resin comprising an acid generator, a resin, a dissolution inhibitor, a surfactant, a solvent, a nitrogen-containing basic compound, and an onium salt of a carboxylic acid. PAG 4-30 on page 15 of Kodama et al is disclosed within the instant application as a preferred compound of component (C) (instant 3 on page 78 of the instant spec) thus it is expected that . The carboxylic acid anions are disclosed on pages 72-80. In these examples, Rb is taken to be a single bond, or Rc is a methyl or substituted methyl group. The reference discloses compound meeting the limitations of compound B, as well as the claimed relationship (see pages 81 and 82). Component F of the resist composition is preferably a novolak resin, which is a phenolic resin meeting the instant molecular weight limitations ([0206]). Compound II-62 meets the limitations for the instant formula VIII. Given the teachings of the reference, it would have been obvious to one of ordinary skill in the art to prepare the

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material of Kodama et al choosing to employ PAG 4-30 as the acid generator that is to be used in combination with the onium salt of a carboxylic acid.

3. Claims 7 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama et al in view of Sinta et al (5,731,364).

Kodama et al has been discussed above, but fails to teach the specific acid generator of the instant formula VIII.

Sinta et al disclose advantageous sulfonium acid generators for use in UV sensitive resists. Preferred compounds (see V and VI) meet the instant claim limitations for formula VIII.

I would have been obvious to one of ordinary skill in the art to prepare the material of Kodama et al choosing to employ the advantageous sulfonium acid generator of Sinta et al as the sulfonium compound with reasonable expectation of achieving a material having decreased roughness.

4. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,136,500) in view of Sinta et al.

Sinta et al has been discussed above.

Kobayashi et al disclose positive as well as negative radiation sensitive resin compositions that, in addition to being capable of providing excellent resolution and pattern profile, are particularly excellent in avoiding the problems of nano-edge roughness or coating surface roughness. The positive type radiation sensitive resin composition comprises (A) (a) an acid-decomposable group-containing resin, or (b) an alkali-soluble resin and an alkali dissolution controller, and (B) a photoacid generator comprising a compound that upon exposure to radiation generates a carboxylic acid having a boiling point of 150 degrees C or higher, and a compound

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that upon exposure to radiation generates an acid other than a carboxylic acid. The negative type radiation sensitive resin composition comprises (C) an alkali-soluble resin, (D) a cross-linking agent (meeting the instant claim limitations of component B), and the component (B) as described above. The reference teaches that a phenolic resin is specifically contemplated (formula 6 of the reference). The reference teaches that a preferred acid generator is compound 36 (column 17), which meets the limitations for compound C. . In these examples, Rb is taken to be a single bond, or Rc is a methyl or substituted methyl group. The reference further teaches that other known acid generators may be employed in combination with the preferred acid generators which meet the limitations of compound A, therefore it would have been obvious to one of ordinary skill in the art to prepare the material of Kobayashi et al choosing to employ the preferred acid generator in combination with the additional advantageous acid generator of Sinta et al, with reasonable expectation of achieving a resin having highly accurate patterns.

Response to Arguments

5. Applicant's arguments filed 10/17/2005 have been fully considered but they are not persuasive. Applicant has argued that the Kodama references fails to employ a phenolic resin. Applicant is directed to paragraph 206 on page 84 of the reference which clearly contemplates the use of a novolak (phenolic) resin having a molecular weight of between 1, 000 to 20, 000. Applicant has also argued that Regarding the argument that there are no choice of compounds in the Kodama reference that would meet the claimed relation, it is respectfully pointed out by the examiner that compound PAG 4-30 on page 15 of the reference is preferred compound 3 on page 79 of the instant specification. With respect to the argument that none of the carboxylic anions meet the instant claim limitations, it is pointed out that many of them do. Ra-Rc-O simply

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requires that Ra be a H atom, alkyl or aryl group, and Rc be a CO group or single bond. Also in RAO Ra is defined in the same manner. For example, II-1 on page 74 has an Ra of CH₃ and a Rc of CO. The additional anions on that page and others appear to have one of these groups as part of the anion, thus the rejection is maintained.

Conclusion


6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Inoue et al (6,406,830) is cited for its teachings of similar sulfonium acid generators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337.

The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Amanda C Walke
Examiner
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ACW

December 22, 2005